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APPRENTICESHIP TRAINING

WATER WELL DRILLER Program

Alberta
MANPOWER
Apprenticeship and Trade Certification

DDN 5984872

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WATER WELL DRILLER TRADE

THE GOAL OF APPRENTICESHIP TRAINING

To develop a competent tradesman who, through skill and knowledge, is capable of operating machines used to produce bore holes.

THE PRODUCT OF APPRENTICESHIP —
a graduate who is able to:

- ★ Complete a bore hole into a finished productive well.
- ★ Complete well records and reports as required by the industry.
- ★ Disinfect and service completed wells and pumping equipment.
- ★ Be familiar with the work in related trades such as mechanics and plumbers.

WATER WELL DRILLER
APPRENTICESHIP INFORMATION

Basic Requirements:

★ Indenture for two periods of Trade experience and training.

★ Attend a five week technical training course in the first period and a four week technical training course in the second period.

★ Fulfill the requirements for each period including 1800 hours of work experience exclusive of time spent at the training course; successfully complete the technical training course and obtain a satisfactory employer's report.

★ Education — a minimum requirement is the completion of grade 9 or a pass on an equivalent entrance examination as prescribed by the Trade Regulation.

★ Age — the minimum age for apprentices is 16 years. There is no upper age limit.

Credits:

★ Accelerated patterns of apprenticeship may be granted for related technical training and/or experience.

Benefits:

★ Apprenticeship is a learning-while-earning program. While working at the trade during apprenticeship, apprentices are assured by regulation of a minimum percentage of journeyman rates; 60% during first period, 85% during second period. Progress from one rate to the next takes place only after successful completion of all the requirements for each period.

★ All apprentices 17 years of age and older are normally eligible for training allowances while attending technical training courses. These allowances are funded by the Canada Employment and Immigration Commission.

★ Administrative procedures establishing the amount of training allowance is complex and can vary with an individual's circumstances. Contact a local Canada Employment Centre for details.

★ An apprentice who successfully completes the program will graduate with an Alberta Completion of Apprenticeship Certificate and a Journeyman Certificate of Qualification.

★ The most significant benefit to the graduate apprentice is that he is well trained in technical and practical aspects of the trade and is able to make a worthwhile and productive contribution to society. Society in return, will provide an opportunity for an above-average income and successful livelihood.

DIRECTIONS FOR PROSPECTIVE APPRENTICES

★ Contact your nearest Apprenticeship and Trade Certification office for detailed information and counselling (see list of offices on page 35).

★ Obtain application forms in duplicate from the Apprenticeship and Trade Certification office and neatly complete, on both copies, the information requested from the apprentice.

★ Contact in person firms that employ Water Well Drillers and apply for an apprentice position. Present your apprentice application forms to the person who interviews you so that he will know who you are and what you can offer his firm.

★ Persevere in the search for apprentice employment and upon obtaining employment, leave the application with the employer.

★ Attach to the apprentice application a copy (transcript) of the marks for your last year of school. Applicants who do not have their school transcripts or a grade nine standing are required to write an entrance examination. If transcripts have been lost, contact Alberta Education for information on school transcripts.

★ Any time credit, for previous experience in the Water Well Driller trade, should be discussed with the employer and requested on the application forms by the employer.

★ A contract of apprenticeship is entered into between the apprentice and the employer and should be signed within three months after the apprentice applications have been approved. If contracts have not been issued within this time, contact the Apprenticeship and Trade Certification office.

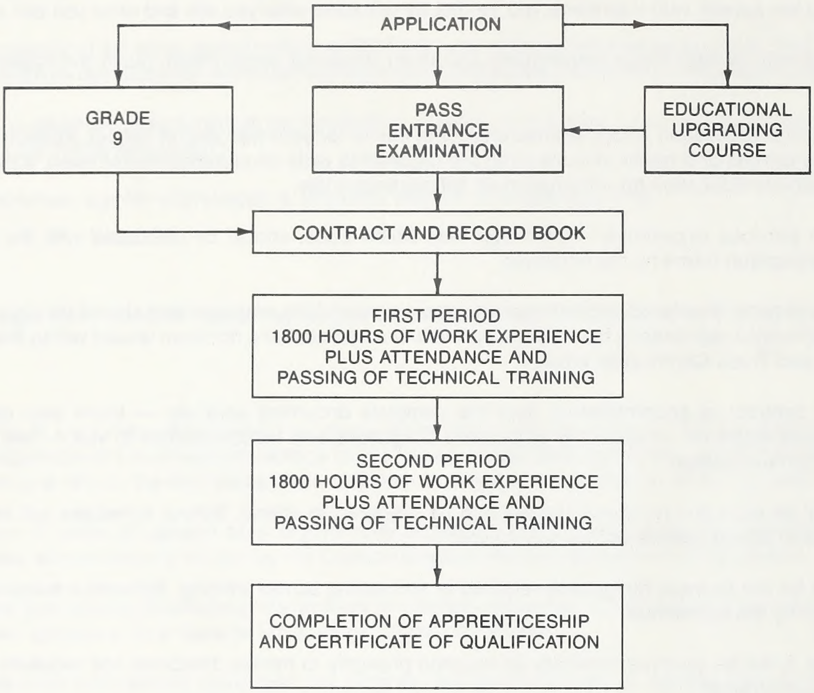
★ Before signing the contract of apprenticeship read the complete document carefully — know your obligations and responsibilities to your employer — know the employer's obligations and responsibilities to you — feel confident you have selected the right occupation.

★ Know when you will be expected to attend classes and be prepared to attend. School schedules will be sent to your employer and notice to attend classes will be sent to you.

★ Prepare in advance for the financial obligations required of you during school training. Reference materials and school supplies are paid for by the apprentice.

★ While an apprentice, it will be your responsibility to respond promptly to mailed directions and requests from Apprenticeship and Trade Certification.

APPRENTICESHIP ROUTE TOWARD CERTIFICATION


APPLICATION
GRADE 9
PASS ENTRANCE EXAMINATION
EDUCATIONAL UPGRADING COURSE
CONTRACT AND RECORD BOOK
FIRST PERIOD
1800 HOURS OF WORK EXPERIENCE
PLUS ATTENDANCE AND
PASSING OF TECHNICAL TRAINING
SECOND PERIOD
1800 HOURS OF WORK EXPERIENCE
PLUS ATTENDANCE AND
PASSING OF TECHNICAL TRAINING
COMPLETION OF APPRENTICESHIP
AND CERTIFICATE OF QUALIFICATION

SAFETY EDUCATION

Safe working procedures and conditions, accident prevention and the preservation of health is of primary importance in the Apprenticeship programs in Alberta. These responsibilities are shared and require the joint efforts of the government, employers, employees and the general public. Therefore, it is imperative that all parties become aware of circumstances that may lead to injury or harm and that safe learning experiences and environment can be created by controlling the variables and behaviors that may contribute to or cause an accident and/or an injury.

It is generally recognized that a safe attitude contributes to an accident free environment. As a result a healthy safe attitude towards accidents will benefit an employee by helping to avoid injury, loss of time and loss of pay.

A tradesman is possibly exposed to more hazards than any other person in the work force and therefore, should be familiar with the Occupational Health and Safety Act and Regulations dealing with his own personal safety and the special safety rules applying to each job.

LEGAL AND ADMINISTRATIVE ASPECTS

Employer's Responsibilities:

Accident prevention and the provisions of safe working conditions are the responsibilities of an employer. The company is responsible for:

1. The provision and maintenance of safety equipment
2. The provision of protective devices and clothing (as required by the Occupational Health & Safety Act, General Safety Regulations)
3. The enforcement of safe working procedures
4. Adequate safeguards for machinery, equipment and tools
5. Observance of all accident prevention regulations
6. Adequate training to allow a worker to use or operate equipment in an effective and safe manner.

Government's Responsibilities:

Apprenticeship and Trade Certification in conjunction with the respective Provincial Apprenticeship Committee assumes the responsibility to assure that adequate safety is reflected in the curriculum and that adequate safety instruction is presented at the training establishments.

The Occupational Health and Safety Inspection Branch assumes the responsibility for periodic inspection of the operation to ensure that regulations for industry are being correctly observed.

Individual's Responsibilities:

The employee is responsible for:

1. Knowing and working in accordance with the safety regulations pertaining to job environment and
2. Working in such a way as not to endanger himself or his fellow employees

The major factor in safety is the individual employee, his personal attitude toward safety and having an awareness of the respective safety regulation.

APPRENTICESHIP COMMITTEE STRUCTURE

Water Well Driller Provincial Apprenticeship Committee

The Provincial Apprenticeship Committee for the Water Well Driller Trade is comprised of members from Local Apprenticeship Committees from the cities of Edmonton, Calgary and Red Deer.

This Committee is concerned with the policies that guide the program and make recommendations to the Apprenticeship and Trade Certification Board and the Director of Apprenticeship and Trade Certification in the following areas:

- ★ Contribute current information relative to changes in the trade and requirements of industry.
- ★ Make recommendations for changes to existing trade regulations.
- ★ Assist in updating of the training program through recommendations for revisions to the course outline and attendant examinations.

Water Well Driller Local Apprenticeship Committee

Local Apprenticeship Committees are concerned with individuals and trade situations within a local region. Meetings are held throughout the year to make recommendations and to discuss problems relating to the apprenticeship program. Members who serve on committees are nominated by employer and labour organizations, and membership is equally divided into employer and employee representation in accordance with The Manpower Development Act.

Apprenticeship Committee Members:

Mr. E. Matters — Edmonton — Employee
Mr. G. Topilka — Edmonton — Employer
Mr. D. Inglis — Edmonton — Employee
Mr. A. Byrt — Edmonton — Employer
Mr. R. Post — Calgary — Employee
Mr. K. Krieger — Calgary — Employee
Mr. D. Murray — Calgary — Employer
Mr. R. Parsons — Calgary — Employer
Mr. F. Gertsma — Red Deer — Employer
Mr. M. Lewis — Red Deer — Employer
Mr. H. Detkavich — Red Deer — Employee
Mr. J. Ferguson — Red Deer — Employee

WATER WELL DRILLER PROGRAM
COURSE OUTLINE

This outline has been prepared in accordance with recommendations from the Provincial Apprenticeship Committee for the Water Well Driller Trade in the Province of Alberta.

The outline was updated following consideration given to recommendations and suggestions from:

- Local Apprenticeship Committees
- Representatives from training institutes
- Curriculum Sub-Committee from the Provincial Apprenticeship Committee

PROCEDURES FOR RECOMMENDING REVISION(S) TO THE COURSE OUTLINE

Any concerned citizen or group in the Province of Alberta may make recommenda-tions for change by writing to Apprenticeship and Trade Certification, Edmonton.

It is requested that recommendations for change refer to specific areas and state references used. Recommendations received will be placed before regular meetings of the Provincial Apprenticeship Committee.

PREFACE

The Ratio of Theory and Shop

★ In the interest of flexibility, the outline for the Water Well Driller trade is not divided into identified Theory and Shop divisions.

★ The preferred 50% Shop and 50% Theory ratio may have to be deviated from at times as certain items of subject material cannot be effectively covered within this ratio.

Mathematics and Science (Related Subjects)

★ The subjects of Mathematics and Science have been determined as being integral components of the technical training when they are applied in the strictest terms of trade involvement, specifically being totally related.

★ These knowledge areas, therefore, are more realistically recognized as being actually Theory items in the trade coverage, rather than Mathematics and Science as self-supporting subject entities.

WATER WELL DRILLER PROGRAM

Subjects and Time Distribution

First Period	**5 Weeks**	**30 Hours Per Week**	**150 Hours**
Section One:	Basic Tools and Skills		6
Section Two:	Gasoline and Diesel Engines (and Systems)		20
Section Three:	Hydraulic and Air Operated Equipment		39
Section Four:	Safe Use of Oxy-Acetylene Equipment		7
Section Five:	Safety		6
Section Six:	Ground Water Geology		6
Section Seven:	Well Construction and Design		15
Section Eight:	Electrical Connections		10
Section Nine:	Common Drilling Systems in Use		6
Section Ten:	Well Pumping Systems		6
Section Eleven:	Welding		23
Section Twelve:	Review and Examinations		6

Second Period	**4 Weeks**	**30 Hours Per Week**	**120 Hours**
Section One:	Ground Water Geology		9
Section Two:	Ground Water Flow		12
Section Three:	Exploration for Ground Water		15
Section Four:	Drilling Systems		24
Section Five:	Well Pumping Systems		12
Section Six:	Well Development		6
Section Seven:	Well Maintenance		6
Section Eight:	Standards and Regulations of Water Well Drilling		6
Section Nine:	Chemical Aspect of Ground Water		6
Section Ten:	Well Drilling Records and Specifications		9
Section Eleven:	Metrics in Water Well Specifications and Drilling		3
Section Twelve:	Review and Examinations		12

FIRST PERIOD TECHNICAL TRAINING

SECTION ONE: BASIC TOOLS AND SKILLS 6 Hours

TOPIC	COURSE OBJECTIVES
A. Tools (Hand and Power)	
1. Proper care and use of hand tools (a) recognition of serviceable and safe condition	1. Select and use proper hand tools for a given task safely and efficiently.
2. Recognition and identification of (a) wrench sizings and use (b) sizing standards, S.A.E., Metric	2. Describe the safe and efficient use of power tools for a given situation.
3. Recognition and identification of special use tools (a) Philips drivers (b) Allen drivers (c) Robertson drivers (d) clutch drivers (e) grease guns (f) types of grease (g) care of grease	
4. Recognition and application of measuring tools (a) units of measure (b) accurate interpretation of measurements (c) relationship of fractional and decimal measurements (d) introduction to the use of (i) metric rules, scales and gauges to measure volumes, temperatures, pressures and mass (ii) micrometers (iii) calipers (iv) torque wrenches (v) thread gauges	
5. Safe use of power tools (a) recognition of unserviceable condition (b) recognition of capacities and limitations	
6. Introduction to hand tool reconditioning	
7. Piping (a) recognition of common fittings (b) cutting pipe (c) threading pipe	

SECTION TWO: GASOLINE AND DIESEL ENGINES (AND SYSTEMS) 20 Hours

A. Internal Combustion Engines **3 Hours**

TOPIC	COURSE OBJECTIVES
1. Recognition of common types and designs (a) 2 and 4 cycle (b) diesel and gasoline (c) air and liquid cooled (d) number of cylinders and arrangement	1. Describe the differences between a two and four stroke cycle engines.

TOPIC — COURSE OBJECTIVES

2. Principles of operation
3. Terminology (recognition)
   - (a) bore and stroke
   - (b) displacement
   - (c) torque and horsepower

B. Cooling Systems — 3 Hours

1. Principles of operation
   - (a) liquid systems
   - (b) air systems
2. Recognition and functions of
   - (a) radiator
   - (b) thermostats
   - (c) radiator caps
   - (d) pumps
   - (e) fins and deflectors
   - (f) shutters
   - (g) filters
     - (i) air
     - (ii) coolant
   - (h) thermatic fans
   - (i) reversible fans
   - (j) shut-down devices
   - (k) oil coolers and heat exchangers
     - (i) torque converter
     - (ii) engine oil
     - (iii) hydraulics
3. Recognition of operational faults
   - (a) leaks (internal and external)
   - (b) overheating
4. Coolant solutions
   - (a) components and proportion
   - (b) handling and storage
   - (c) testing methods and interpretation
   - (d) inhibitors
5. System service and maintenance
   - (a) adjustments
   - (b) servicing an overheated system
   - (c) remove and replace methods
     - (i) hoses
     - (ii) belts, etc.

C. Lubrication Systems — 3 Hours

1. Lubricating oils
   - (a) identification of types and grades
   - (b) handling and storage procedures
   - (c) precautions for adding oil
2. Oil filters and systems
   - (a) recognition of types
   - (b) operational principles of
     - (i) full flow systems
     - (ii) by-pass systems
   - (c) installation procedures and precautions
   - (d) inspection and cleaning of breathers

TOPIC	COURSE OBJECTIVES

3. Engine oil interpretation
    - (a) oil condition
    - (b) presence of moisture bubbles (dipstick)
    - (c) leaks
    - (d) other foreign substances
4. Oil coolers and heat exchangers

D. Fuel Systems **3 Hours**

1. Engine fuels
    - (a) recognition of types and grades
    - (b) handling and storage precautions
    - (c) recognition and function of system components
        - (i) gasoline system
        - (ii) diesel system
        - (iii) L.P.G. system

E. Electrical Systems **3 Hours**

1. Batteries
    - (a) sizes and types
    - (b) terminology and descriptions
    - (c) care and maintenance
    - (d) testing procedures and interpretation
        - (i) hydrometer readings
        - (ii) voltage drop
    - (e) use of jumper cables
        - (i) procedures and precautions
2. Circuity
    - (a) recognition of circuits
        - (i) series
        - (ii) parallel
        - (iii) series parallel
    - (b) recognition of circuit defects
        - (i) shorts
        - (ii) opens
        - (iii) grounds
    - (c) recognition of simple symbols
        - (i) positive
        - (ii) negative
        - (iii) ground
        - (iv) battery, etc.
3. Ignition
    - (a) recognition and function of components
        - (i) spark plugs
        - (ii) contact points
        - (iii) condenser
        - (iv) coil, etc.

F. Servicing and Trouble Shooting **5 Hours**

1. Engine cooling, fuel and lubrication systems
2. Interpretation of schedules
    - (a) hour meter
    - (b) adverse conditions

TOPIC

COURSE OBJECTIVES

3. Interpretation of failure indicators (malfunctions)
   - (a) heavy white or black exhaust
   - (b) excessive blue exhaust
   - (c) rough running and bearing noise
   - (d) overheating

SECTION THREE: HYDRAULIC AND AIR OPERATED EQUIPMENT 39 Hours

A. Basic Hydraulics (Terminology as Defined by National Fluid Power Association N.F.P.A.) 3 Hours

1. Describe the principle of hydraulic equipment in relation to:
   - (a) systems
   - (b) components
   - (c) adjustments
   - (d) maintenance
   - (e) safety

1. Principles of operation (Pascal's Law)
2. Characteristics of fluid mechanics
   - (a) multiply force
   - (b) transmit motion and pressure
   - (c) relation of temperature and pressure
3. Advantages of fluid mechanics
4. Basic description of hydraulic schematic drawings
   - (a) graphic symbols as identified by U.S.A.S.I.

B. Hydraulic Systems 24 Hours

1. Introduction to a basic hydraulic system and layout, i.e. tank, lines, pump, one valve selector body, basic cylinder, return lines, filters
2. Recognition and function of basic system components
   - (a) the reservoir circuit
     - (i) types and designs
     - (ii) principle of operation
     - (iii) components of the reservoir circuit
       - — strainers
       - — gauges
       - — filters
   - (b) hydraulic pumps
     - (i) types and designs
       - — vane
       - — gear
       - — internal gear
       - — piston
       - — gerator
     - (ii) functions and applications
     - (iii) construction details in relation to type recognition
     - (iv) recognition of fixed and variable displacement types — principles of operation
     - (v) pressure, flow testing and diagnosis of pumps
     - (vi) recognition of pump failures and causes
       - — cavitation
       - — aeration
       - — fluid contamination
       - — normal wear
     - (vii) alignment
       - — angular
       - — off set

TOPIC

COURSE OBJECTIVES

- (c) valves
  - (i) pressure control valves
  - (ii) flow control valves
  - (iii) directional control valves
- (d) explanation and study of different types of hydraulic systems
  - (i) open and closed centre systems
  - (ii) series
  - (iii) parallel
  - (iv) pilot operated systems
- (e) hydraulic motors
  - (i) types and designs, identification of
  - (ii) principles of operation
  - (iii) functions and applications
  - (iv) service procedures and precautions
  - (v) testing and diagnosis procedures
  - (vi) recognition of faulty operation — sound, appearance, temperature
  - (vii) recognition of special uses — high speed, reversing
- (f) hydraulic piping, fittings and seals
  - (i) piping and fittings
    - — materials
    - — identification markings
    - — limitations
    - — types and functions
  - (ii) removal procedures and pracautions
  - (iii) recognition of unserviceable conditions
  - (iv) installation procedures and precautions
    - — security and torque
- (g) hydraulic hoses
  - (i) types and styles
  - (ii) hose fittings and attaching methods
  - (iii) "I.D." and "O.D." designations
  - (iv) hose construction and pressure limitations in relation to construction
  - (v) removal and replacing precautions
- (h) accumulators
  - (i) principle of operation
  - (ii) functions and applications
  - (iii) service safety precautions
  - (iv) types and designs
  - (v) diagnosis procedures
  - (vi) remove and replace procedures
  - (vii) use of an inert gas
  - (viii) charging and testing procedures
  - (ix) expression of capacities and pressure in metric system terms

TOPIC

COURSE OBJECTIVES

- (i) coolers and heat exchangers
  - (i) types and functions
  - (ii) principles of operation
  - (iii) operational limits
  - (iv) location condition in relation to entire system
  - (v) operational condition in relation to entire system
  - (vi) recognition of faulty operation
  - (vii) service and repair limitations
  - (viii) service and repair precautions
    — heat and pressure hazards
- (j) cylinders
  - (i) relationship of function to type
  - (ii) recognition of types and designs
  - (iii) principles of operation
  - (iv) diagnosis procedures
  - (v) recognition of faulty condition
  - (vi) removal procedures and precautions
- (k) relation of fluid characteristics to hydraulic unit performance
- (l) diagnosing hydraulic inefficiency
  - (i) time/cycle test
  - (ii) pressure testing components
  - (iii) flowmeter sequence testing of circuit
- (m) hydraulic brakes
  - (i) servicing
  - (ii) adjustment
- (n) hydraulic clutches
  - (i) adjustment

C. Air Systems (Truck) **6 Hours**

1. Introduction to a basic air system
   - (a) compressors
   - (b) tanks
   - (c) air dryers
   - (d) filters
   - (e) regulators
   - (f) valves
   - (g) governors
2. Air over hydraulic
   - (a) operation
3. Air clutches
   - (a) operation
   - (b) adjustment
4. Air brakes
   - (a) operation
   - (b) adjustment
   - (c) safety precaution when servicing spring brakes
5. Air motors
   - (a) operation

Course objectives:

1. Recognize the different systems and all safety factors.
2. Be able to perform all maintenance.

TOPIC — COURSE OBJECTIVES

D. Air Systems — High Capacity (Drilling Air) **6 Hours**

1. Types of Compressors
2. Operational Safety
3. Maintenance

SECTION FOUR: SAFE USE OF OXY-ACETYLENE EQUIPMENT (FOR HEATING AND CUTTING ONLY) 7 Hours

A. Gases **½ Hour**

1. Oxygen
   - (a) recognition
   - (b) characteristics
   - (c) handling precautions
2. Acetylene
   - (a) recognition
   - (b) characteristics
   - (c) composition
   - (d) handling precautions
3. Propane
   - (a) recognition
   - (b) characteristics
   - (c) composition
   - (d) handling precautions
4. Construction details of cylinders

Course objectives:

1. Operate oxy-acetylene equipment in a safe manner, for the purpose of heating and cutting of ferrous metals.

B. Cylinders and Fittings **½ Hour**

1. Identification of each cylinder
2. Identification of fittings
   - (a) color
   - (b) thread
   - (c) size
3. Construction details of cylinders
   - (a) contents of acetylene cylinders
   - (b) safety provisions
   - (c) handling precautions
   - (d) recommended locations

C. Regulators and Hoses **½ Hour**

1. Basic construction and function
2. Precautionary handling and maintenance procedures
3. Installation procedures and precautions
4. Identification of hoses
   - (a) coloring
   - (b) threads
   - (c) sizing standards
5. Care and handling of hose(s)
6. Detection of leaks
   - (a) methods
   - (b) precautions

D. Torch **½ Hour**

1. Recognition of part terminology
2. Function of torch components

TOPIC	COURSE OBJECTIVES	
3. Recognition of tip sizes and types		
4. Care and storage of torch and tips (a) cleaning methods		
5. Recognition of torch malfunctions (a) back fires (b) flash back (c) overheating (d) incorrect mixture		
6. Prevention and correction of malfunctions		
7. Types of flame and their application (a) carburizing (b) neutral (c) oxidizing		
E. Cutting and Heating Attachments		**½ Hour**
1. Component recognition and terminology		
2. Care and handling		
3. Attaching, procedures and precautions		
F. Basic Techniques		**3 Hours**
1. Introduction to heating (a) interpretation of metal color (b) recognition of the effect heat has on metal		
2. Introduction to cutting (a) recognition of "cutable" metals (b) recognition of suitable flame (c) interpretation of the cutting process (d) operational procedures and precautions (e) specific safety procedures, eye and face protectors, fire extinguishers, preliminary precautions		
G. Safety		**1½ Hours**
1. First aid for minor injuries		
2. Various types of harmful rays		
3. Personal and public safety of harmful rays		
4. Welding in confined areas		
SECTION FIVE:	**SAFETY**	**6 Hours**
A. Shop and Field Safety		
1. On the rig	1. Identify all potential safety hazards in a given situation.	
2. Handling electrical equipment		
3. Cleaning machinery and motors		
4. Handling heavy equipment		
5. Flammable liquids		
6. Safety on the road-regulations pertaining to transportation		

TOPIC	COURSE OBJECTIVES
7. Hard hats	
8. Safety shoes	
9. Power lines	
10. Carbon monoxide	
11. Air hoses	
12. Batteries (hazards)	
13. Fire types and extinguishers	
14. Occupational Health and Safety Act	
15. Lessening the risk of accidents	
16. Gas hazards (a) natural (b) H_2S	

SECTION SIX: GROUND WATER GEOLOGY 6 Hours

A. Introduction to Geology 5 Hours

1. Hydrologic cycle (water cycle)	1. Use proper terminology to describe geological formations as it applies to the water well industry.
2. Underground water (a) zone of soil moisture (b) zone of aeration (c) zone of saturation	
3. Occurence and movement of ground water	
4. Ground water storage	
5. Geologic processes that form aquifers	
6. Formations found in Alberta	

B. Water Sources 1 Hour

1. Surface water (a) definition (b) effect on water table	
2. Ground water (a) definition	

SECTION SEVEN: WELL CONSTRUCTION AND DESIGN 15 Hours

A. Design and Construction Considerations 3 Hours

1. History of water well drilling (a) importance of water	1. List the basic considerations of design and construction methods as it relates to domestic water wells.
2. Basic types of wells description (a) dug (b) bored or augered (c) driven (percussion) (d) drilled (rotary) (e) jetted	
3. Considerations to be taken when selecting drilling equipment (a) diameter of well (b) depth of well (c) construction method to be used (i) advantage of each method (ii) disadvantage of each method	

TOPIC COURSE OBJECTIVES

- (d) working in consolidated and unconsolidated formations
- (e) cost per foot of hole
- (f) equipment available

4. Well casing — description, identification and sizing
   - (a) standard pipe
   - (b) line pipe
   - (c) reamed and drifted pipe
   - (d) drive pipe
   - (e) water well casing
   - (f) two-ply, slip joint
   - (g) plastic pipe
5. Casing requirements
   - (a) thickness (weight)
   - (b) resistance to corrosion — encrustation
6. Casing requirements (Alberta)
7. Casing strength
   - (a) collapse strength
8. Relation of well diameter to yield

B. Well Considerations **2 Hours**

1. Well design characteristics
   - (a) customer's requirements
   - (b) casing
   - (c) formation
   - (d) screens

C. Well Screens **3 Hours**

1. Structural strength of the screen
2. Corrosion resistance
3. Sand control
4. Measuring samples
5. Hydraulic design
6. Summary of design factors (above 5)

D. Methods of Setting the Screen **2 Hours**

1. Standard or pull back
2. Bail down
3. Wash down
4. Sealing screen to casing

E. Screen Setting Gravel Packs **2 Hours**

1. Natural gravel pack
2. Artificial gravel pack
   - (a) bail down method
   - (b) pull back method

F. Sealing, Grouting and Cementing Casings **2 Hours**

1. Contamination seal
2. Case out an undesirable aquifer
3. Plugging abandoned holes and wells
4. Equipment required

TOPIC — COURSE OBJECTIVES

G. Plumbness and Alignment Test — **1 Hour**

1. Conditions that cause misalignment and out of plumbness
2. Graphing the centre line of a well

SECTION EIGHT: ELECTRICAL — 10 Hours

A. EPB Regulations — **2 Hours**

B. Waterproof Cable Splicing — **1 Hour**

1. Plastic covered stak-on
2. Stak-on and taped
3. Soldered and taped
4. Heat shrink insulators
5. Care of conductors during installations
6. Cable support in deep wells
7. Repairs to extension cords

Course objectives:

1. Make a water proof splice on a submersible pump lead as per code.
2. List the proper procedure for protecting and burying of underground cable as per E.P.B. regulations.
3. Install and wire motor controls, as it pertains to water well drilling.
4. Perform all electrical tests as required on pumping systems.

C. Electric Cable — **7 Hours**

1. Connect/Disconnect at well head for pump servicing
2. Underground installation (C.E.C. Table 53)
   - (a) depth
   - (b) mechanical protection of underground (C.E.C. Sect. 12.012)
   - (c) terminal ends of cable (C.E.C. Sect. 12.012.5)
     - (i) protection above ground
     - (ii) mechanical connection below ground
3. Control Box
   - (a) installation
     - (i) location of controller
     - (ii) wiring of controller
     - (iii) junction box before controller
4. Motor ground
   - (a) while testing pump
   - (b) permenant installation
5. Electrical Circuits
   - (a) definition and recognition of circuit defects
     - (i) shorts
     - (ii) opens
     - (iii) grounds
   - (b) simple testing of circuits
     - (i) volt meter
     - (ii) amp probe
     - (iii) ohm meter

SECTION NINE: COMMON DRILLING SYSTEMS IN USE — 6 Hours

A. Percussion Drilling, Churn, Spudder, Cable Tool

1. Cable tool rig (principles of operation)

Course objectives:

1. Describe the various method of drilling bore holes and the equipment used.

TOPIC

COURSE OBJECTIVES

2. Tool string and joints — recognition
    - (a) rope socket
    - (b) tool joint
    - (c) drilling jars
    - (d) drill stem
    - (e) water course
    - (f) drill bit
    - (g) tool wrenches
        - (i) tool set
        - (ii) wrench bar and chain
3. Cable
    - (a) lubrication
    - (b) attaching wire rope to drums
    - (c) cable terminology and construction
    - (d) spooling cable
    - (e) reeving
    - (f) measuring wire rope
    - (g) care of cable
4. Attaching cable to clevis (introduction)
    - (a) dry method
    - (b) zinc or babbet method
    - (c) working loads of cable
5. Pipe driving equipment — description and operation
    - (a) drive clamps
    - (b) drive heads
        - (i) inside drophead
        - (ii) outside drophead
        - (iii) screw type (hollow male screw)
6. Lifting pipe — description and operation
    - (a) casing elevators
    - (b) swivel pin hook
    - (c) casing ring and slips
    - (d) pipe tongs
    - (e) pipe clamps
7. Fishing tools — description and operation
    - (a) babcock sockets
    - (b) fishing jars
    - (c) friction sockets
    - (d) full circle slip socket
    - (e) combination socket
    - (f) latch jack
    - (g) impression block
8. Function of drill bits
    - (a) penetration
    - (b) crushing
    - (c) reaming
    - (d) mixing
    - (a) angle of clearance
    - (b) angle of penetration
    - (c) wearing surface
    - (d) contour of penetrating edge
    - (e) reaming edge
    - (f) area of crushing face
    - (g) area of water channel
    - (h) cross section of drill bit
9. Dressing bits — terminology and identification
10. Importance of set up

TOPIC

COURSE OBJECTIVES

11. Water supply
    - (a) sanitary aspects
    - (b) truck loading systems
12. Operating
    - (a) spudding in
    - (b) driving pipe
    - (c) use of mud
13. Problems encountered "in the hole"
    - (a) lost string
    - (b) boulders
    - (c) unconsolidated formations
        - (i) quick sand
        - (ii) gravel
        - (iii) clay
    - (d) tool following a fault line
    - (e) foreign objects in hole
    - (f) collapsed casing
    - (g) stuck tool
14. Bailing
    - (a) dart valve baler
    - (b) flat bottom baler
    - (c) sand pump
15. Rig terminology — recognition
    - (a) spudder arm, walking beam (stroke)
    - (b) bull reel
    - (c) casing reel
    - (d) sand reel
    - (e) mast or derrick
    - (f) pitman
    - (g) head shock absorber
    - (h) countershaft — jackshaft
    - (i) catheads

B. Rotary, Air Rotary and Air Hammer Drilling

1. Terminology
    - (a) crown block
    - (b) water swivel
    - (c) kelly
    - (d) stand pipe
    - (e) swivel base
    - (f) rotary table
    - (g) top head drive
    - (h) spider and slips
    - (i) pipe clamps
    - (j) surface pipe
    - (k) drill pipe (stem)
    - (l) drill collar
    - (m) mast
    - (n) main hoist
    - (o) sand reel hoist
    - (p) cathead
    - (q) mud pump
2. Introduction to rotary drilling
    - (a) set up
    - (b) fluid circulation
    - (c) bit types
    - (d) spudding in
    - (e) adding drill stem
    - (f) mud pits and ditches

TOPIC COURSE OBJECTIVES

3. Introduction to reverse circulation rotary drilling
    - (a) set up
    - (b) fluid circulation
    - (c) bit types
4. Introduction to air rotary drilling
    - (a) set up
    - (b) bit types
5. Introduction to air hammer drilling
    - (a) set up
    - (b) bit types
6. Drilling fluids — introduction
    - (a) need for fluids
    - (b) types of fluids

C. Auger, Boring or Rotary Bucket Drilling

1. Introduction
2. Principle of operation

D. Other Drilling Systems

1. Jetting
    - (a) principle of operation
2. Hollow-rod Drilling
    - (a) principle of operation
3. Turbine Drilling
    - (a) description
4. Electro-Drilling

SECTION TEN: WELL PUMPING SYSTEMS 6 Hours

A. Pump Types and Installation

1. Shallow well pumps
    - (a) suction lift pumps
        - (i) principle of operation — single acting
          — double acting
        - (ii) limitations
          — depth of well
          — effect of altitude
          — effect of drawdown
          — suction leaks
        - (iii) pump terminology
          — ball valve
          — foot valve
          — suction pipe
          — plunger
          — discharge pipe
    - (b) centrifical pumps
        - (i) principle of operation
        - (ii) limitations
          — depth of well
          — effect of altitude
          — draw down
          — effect of increasing head
          — pumps in series
          — pumps in parallel

1. Describe the various pumping systems their construction and methods.

TOPIC COURSE OBJECTIVES

- (iii) pump terminology
  - — impeller — semi-open
  - — closed
  - — primer reservoir
  - — suction strainer
  - — impeller seal
- (c) rotary gear pump
  - (i) principle of operation
  - (ii) limitations
    - — depth of well
    - — effect of altitude
    - — draw down
    - — head pressure
  - (iii) pump terminology
    - — gear sets
    - — housing
    - — bearings
    - — seals

2. Deep well pumps
   - (a) plunger pump (piston)
     - (i) principle of operation
       - — single acting
       - — double acting
     - (ii) limitations
       - — depth of well
       - — volume required
     - (iii) terminology
       - — drop pipe
       - — working head
       - — check valve
       - — plunger
       - — plunger valve
       - — sucker rod (pump rod)
     - (iv) installation
       - — well casing
       - — drop pipe
       - — check valve (foot valve)
       - — plunger and valve
       - — pump rod
       - — closed top cylinder
   - (b) deep well turbines (lineshaft)
     - (i) principle of operation
       - — single stage
       - — multi-stage
     - (ii) limitations
       - — cost
     - (iii) pump terminology
       - — pump head assembly
       - — column pipe
       - — packing gland
       - — pump bowl assembly
       - — air line
       - — impellers
   - (c) deep well submersible
     - (i) principle of operation
     - (ii) limitations
       - — cost
       - — depth and pressure
     - (iii) terminology
       - — pumping element
       - — pump head
       - — column pipe
   - (d) air lift pumping
     - (i) principle of operation
     - (ii) limitations
       - — depth
       - — air pressure/volume

TOPIC	COURSE OBJECTIVES
(iii) terminology — submergence — foot piece — educator pipe (e) jet pump (ejector pump) (i) principle of operation — shallow well operation — deep well operation (ii) limitations (iii) terminology — ejector — lift pipe — return pipe	
3. Safety in installing or removing pumps	

SECTION ELEVEN: WELDING 23 Hours

A. Arc Welding

1. Introduction to lab (a) proper apparel (b) description of welding helmet and placement of lens (c) proper housekeeping practice	**1. Describe the basic welding theories as it relates to build up and hard surfacing.**	**1 Hour**
2. Arc welding machines (a) A.C. transformer (b) A.C. — D.C. rectifier (c) D.C. generator (d) A.C. generator (e) advantages and disadvantages of the various types of machines (f) reverse and straight polarity (g) function of voltage and amperage	**2. Demonstrate the proper procedures of arc welding in the flat and horizontal positions for bead buildup and hard surfacing.**	**1 Hour**
3. Accessories for arc machines (a) cable construction and sizes (b) electrode holders and maintenance (c) cable lugs, quick connectors and ground clamps	**3. Identify all safety requirement as it relates to welding trade.**	**½ Hour**
4. Mild steel arc welding electrodes (a) numerical definitions (b) manufacturing specification control (c) numbering system (d) functions of the coating (e) function of the slag (f) alloy additions to coating (g) static and dynamic loading		**1 Hour**
5. Safety (a) first aid for minor injuries (b) various types of harmful rays (c) personal and public safety of harmful rays (d) welding in confined areas (e) grounding electrical equipment (f) hazards involved with HS gas (g) various types of fires and extinguishers (h) proper use and maintenance of grinders		**1 Hour**

TOPIC COURSE OBJECTIVES

6. Weld faults **1 Hour**
    - (a) inclusions
        - (i) slag
        - (ii) porosity
    - (b) lack of penetration
    - (c) excessive penetration
    - (d) insufficient build-up
    - (e) excessive build-up
    - (f) pipe misalignment
    - (g) undercutting

7. Arc welding lab practice **17½ Hours**
    - (a) practice striking arc
    - (b) beading in the flat position
    - (c) beading in the horizontal position

SECTION TWELVE: REVIEW AND EXAMINATIONS 6 Hours

A. Review **3 Hours**

B. Examination **3 Hours**

SECOND PERIOD TECHNICAL TRAINING

SECTION ONE: GROUND WATER GEOLOGY 9 Hours

TOPIC	COURSE OBJECTIVES
A. Types of Formations	
1. Types of formations (a) granite (b) basalt (c) trap rock	1. Use proper terminology to identify and describe the geological formations as it applies to geologic maps reports and samples.
2. Metamorphic (a) gneiss (b) quartz (c) schist	
3. Sedementary (a) limestone (b) sandstone (c) shale (d) clay (e) sand (f) gravel	
4. Recognition of important formations in Alberta (a) review of first period material	
5. Use of Geologic maps and reports	
6. Sub surface water layers	
7. Topographic map interpretation	

SECTION TWO: GROUND WATER FLOW 12 Hours

A. Review of Basic Concepts	
1. Ground water flow	1. To explain ground water flow as it pertains to various formations. 2. Hydraulic properties of rocks (a) porosity (i) intergranular (ii) fracture (iii) solution — vuggy (b) permeability (c) categories of rocks based on hydraulic properties (i) aquifer (ii) aquiclude (iii) aquitard (iv) aquifuge (d) types of aquifers (i) confined (ii) unconfined (e) transmissivity (f) storativity
2. Conduct and evaluate the various tests using test equipment for water levels and flow rates.	
B. Aquifer Tests (Pumping Tests)	
1. Definition of terms (a) statis water level (i) non-pumping water level (ii) pre-test water level (b) drawdown (i) available drawdown	

TOPIC — COURSE OBJECTIVES

- (c) specific capacity
- (d) cone of influence
- (e) recovery
- (f) residual drawdown

2. Types of aquifer tests
   - (a) water withdrawal
   - (b) water injection
   - (c) flowing wells
3. Test equipment
   - (a) for measuring water levels
   - (b) for measuring flow rate
4. Standards for tests
5. Interpretation of test results

C. Exercises

1. Conduct test
2. Plot test results

SECTION THREE: EXPLORATION FOR GROUND WATER — 15 Hours

A. Basic Considerations — 10 Hours

1. Site selection

   1. Identify and select the proper drilling sites and be able to describe the procedure for sample logging the various steps of waterwell drilling.

2. Types of ground water maps
   - (a) geological maps
   - (b) contour maps
   - (c) topographical maps
3. Choice of areas of research
4. Methods of attacking the problem
5. Sources of information

B. Sample Procedures and Sample Logging (Recognition and Description) — 5 Hours

1. Sampling of cuttings
2. Driving samples
3. Hand texturing
4. Sieve analysis
5. Hydrometer analysis
6. Side wall coring
7. Gamma and electro logging
8. Equipment operation
9. Interpretation

SECTION FOUR: DRILLING SYSTEMS — 24 Hours

A. Rotary, Air Rotary and Air Hammer Drilling

1. Principle of operation
   - (a) top head drive
   - (b) rotary table drive
   - (c) principle of air rotary drilling
   - (d) mist injection
   - (e) chemical injection
   - (f) principles of air hammer drilling

   1. Describe in detail, using the proper terminology the various methods of drilling a bore hole using various equipment and proper attachments.

2. Surface pipe

TOPIC COURSE OBJECTIVES

3. Drilling fluids
    (a) marsh funnel
    (b) mud balance
    (c) sand content
    (d) Ph of fluid
4. Drill bits
    (a) bit requirements
    (b) types
    (c) description
    (d) uses
5. Fishing tools
    (a) terminology
    (b) purpose
    (c) types
6. Importance of set up
7. Water supply
8. Problems encountered "in the hole"
    (a) lost bit
    (b) lost drill stem
    (c) unconsolidated formation
        (i) quick sand
        (ii) gravel
        (iii) clay
    (d) loss of circulation
    (e) cave-in
    (f) wild flowing hole

B. Auger, Boring or Rotary Bucket Drilling

1. Principle of operation
2. Terminology
    (a) Kelly Bar
3. Buckets
    (a) orange peel bucket
    (b) stone tongs
4. Augers
5. Importance of set up
    (a) levelling outriggers
6. Operation
7. Problems encountered "in the hole"
    (a) boulders in hole
    (b) unconsolidated formations

C. Future Drilling Systems

1. Forced flame drilling
2. Plasma drilling
3. Laser drilling
4. Turbine drills
5. Spark drills
6. Ultrasonic

SECTION FIVE: WELL PUMPING SYSTEMS 12 Hours

A. Review of First Period Material 3 Hours

TOPIC

COURSE OBJECTIVES

1. Pump types, installations, limitations and related terminology
    - (a) above ground
        - (i) suction lift pumps
        - (ii) centrifugal pump
        - (iii) gear pumps
    - (b) deep well
        - (i) plunger pump
        - (ii) deep well turbines (lineshaft)
        - (iii) deep well submersible
        - (iv) airlift pumping
        - (v) jet pump (ejector pump)
2. Safety review

1. Describe the various types of pump configurations, their advantages, disadvantages and limitations with regard to volume and depth of a water well.

B. Pump Maintenance **6 Hours**

1. Mechanical
    - (a) above ground
        - (i) suction lift pumps
        - (ii) centrifugal pumps
        - (iii) gear pumps
    - (b) deep well
        - (i) plunger pump
        - (ii) deep well turbines (lineshaft)
        - (iii) deep well submersible
        - (iv) airlift pumps
        - (v) jet pumps (ejector pump)

C. Water Systems **3 Hours**

1. Sizing a water system
    - (a) domestic
    - (b) farm
2. Construction
    - (a) one pump system
    - (b) two pump system

SECTION SIX: WELL DEVELOPMENT 6 Hours

A. Review of Well Screens **½ Hour**

B. Theory of Well Development **3 Hours**

1. Importance of proper development

2. List the various methods of well development and importance of proper development.

C. Methods of Development

1. Surging
2. Compressed air
    - (a) open well method
    - (b) closed well method
3. Backwashing
4. Jetting
5. Chemical

D. Equipment **2 Hours**

1. Surge blocks
    - (a) solid plunger or swab
    - (b) valved plunger

TOPIC | COURSE OBJECTIVES

2. Well caps
3. Three way valves
4. Air compressors
5. Pumping equipment

E. Developing Hard and Soft Rock Formation — **½ Hour**

1. Dynamite
2. Acid

SECTION SEVEN: WELL MAINTENANCE — 6 Hours

A. Well Failure Causes

1. Corrosion — Course objective: 1. To identify all well problems symptoms and remedies.
    (a) chemical action
        (i) low pH
        (ii) low T.D.S.
    (b) electro chemical action
        (i) high pH
        (ii) high T.D.S.
    (a) and (b) above will cause
        — screen slot enlargement
        — structural failure of the screen
        — redeposition of the corrosion product
2. Incrustation
    (a) upset of the ground water equilibrium
3. Sand pumping
4. Equipment failure
    (a) decreased pumping rate
    (b) excessive heating of the motor
    (c) excessive vibration
    (d) cavitation or other sounds
    (e) change in pattern of oil consumption of the motor
    (f) cracking or settling of pad or ground around pumping equipment

B. Relationship Between Failure Causes (i.e.) pump failure — caused by pumping sand in turn caused by corrosion of the well screen

C. Warning Signs

1. Sand pumping
2. Change in specific capacity of a well

D. Treatment of Incrustation

1. Acidizing
2. Mechanical cleaning

E. Recovering Well Screens

F. Testing Well Efficiency

1. Static water level
2. Pumping water level

TOPIC	COURSE OBJECTIVES
3. Normal pumping rate and hours of operation	
4. Pumping rate after 8 hours of pumping	
5. Sand content after 8 hours of pumping	
6. General trend in area over the last 5 – 10 years	
7. Total depth of well	
8. Efficiency of well	
9. Amount of draw down caused by interference of other wells in the area	
10. Compare statistics to original statistics of the well when new	

SECTION EIGHT: STANDARDS AND REGULATIONS OF WATER WELL DRILLING 6 Hours

TOPIC	COURSE OBJECTIVES	
A. Standards and Regulations		
1. Applicable Provincial Acts and Regulations	1. Identify by listing all the regulations that govern the drilling of a water well.	
B. Disinfecting Wells and Piping		
C. Common Pollution Problems		

SECTION NINE: CHEMICAL ASPECTS OF GROUND WATER 6 Hours

TOPIC	COURSE OBJECTIVES	
A. Ground Water Chemistry		**2 Hours**
1. For human consumption	1. List common water well chemical and bacterial problems and their solutions.	
2. For livestock		
3. Analysis		
4. Effect of increased usage of chemical content		
B. Water Treatment Systems		**4 Hours**
1. Bacteria		
2. Softness		
3. Taste		
4. Odor		
5. Corrosiveness		

SECTION TEN: WELL DRILLING RECORDS AND SPECIFICATIONS 9 Hours

TOPIC	COURSE OBJECTIVES	
A. Basic Records at the Well Site		**3 Hours**
B. Contracts and Agreements		**1½ Hours**
C. Well Reports		**1½ Hours**
1. Customer	1. List the various records and reports necessary for water well construction and distribution of these reports.	
2. Government		
3. Driller's file		

TOPIC	COURSE OBJECTIVES	
D.		**3 Hours**
1. Terrain and condition of roads		
2. Accessibility to parts		
3. Labour		
4. Fuel and lubrication		
5. Cost of equipment		
6. Overhead		
7. Insurance		
SECTION ELEVEN:	**METRICS IN WATER WELL SPECIFICATIONS AND DRILLING**	**3 Hours**
A. Introduction		**½ Hour**
1. Why metric? (S.I.)		
B. Metric Units		**1½ Hours**
1. Length	1. List the metric units used in calculating mass, length, volume, pressure and their conversion factors	½ Hour
2. Area		
3. Volume		
4. Mass		
5. Pressure		
6. Temperature		
7. Speed		
8. Volume rate of flow		
D. Symbols		**½ Hour**
SECTION TWELVE:	**REVIEW AND EXAMINATIONS**	**12 Hours**
A. Review		**9 Hours**
B. Examination		**3 Hours**

SUGGESTED REFERENCE MATERIALS

Ground Water and Wells — Johnson Division, UOP

FMO Preventive Maintenance — John Deer

Occupational Health and Safety Regulations

Water Systems Handbook

Planning for an Individual — Water System

TECHNICAL TRAINING SCHOOLS

The Water Well Driller apprenticeship training program is offered by Alberta Manpower, Apprenticeship and Trade Certification. Staff and facilities for teaching the program are supplied by:

1. Red Deer College

LOCATION OF APPRENTICESHIP AND TRADE CERTIFICATION REGIONAL OFFICES

BONNYVILLE

CALGARY

EDMONTON

FORT McMURRAY

GRANDE PRAIRIE

HINTON

LETHBRIDGE

MEDICINE HAT

PEACE RIVER

RED DEER

VERMILION

GOVERNMENT OF THE PROVINCE OF ALBERTA
ALBERTA REGULATION 362/79

(Filed November 19, 1979)

THE MANPOWER DEVELOPMENT ACT

DEPARTMENT OF ADVANCED EDUCATION AND MANPOWER

MINISTERIAL ORDER

I, James D. Horsman, Minister of Advanced Education and Manpower, pursuant to sections 30(2) and 37(2) of The Manpower Development Act, hereby make regulations in the Appendix attached hereto, being the Water Well Driller Trade Regulation.

Dated at the City of Edmonton, in the Province of Alberta, this 31st day of October, 1979.

JAMES D. HORSMAN,
Minister of Advanced Education
and Manpower.

APPENDIX

THE MANPOWER DEVELOPMENT ACT

Water Well Driller Trade Regulation

1(1) In this regulation

(a) "water well driller" means a person engaged in the drilling, construction, development, service and sanitation of water wells and the repair, service and installation of water well pumps.

(b) "General Regulations" means the General Regulations under The Manpower Development Act (Alta. Reg. 43/77) as amended;

(c) "trade" means the trade of a water well driller.

(2) The definitions in the General Regulations apply to this regulation.

PART 1

APPRENTICESHIP AND TRADE TRAINING

2(1) A person is eligible to be an apprentice in the trade who has satisfied the requirements of section 5 of the General Regulations and has

(a) produced to the satisfaction of the Director evidence that he has acquired at least a grade 9 education or equivalent, or

(b) passed the entrance examination prescribed by the Board.

3(1) Subject to subsection (2), a person engaged in the trade and who is a journeyman or employs a journeyman may employ one apprentice and one additional apprentice for each additional journeyman employed.

(2) The Director may authorize a person to temporarily employ an apprentice, in addition to those employed under subsection (1), for the purpose of training the apprentice in a branch of the trade not practiced by the person to whom he is apprenticed.

4(1) The term of apprenticeship shall consist of 2 periods.

(2) Each period referred to in subsection (1) shall consist of not less than 1800 hours of employment, exclusive of time spent attending technical courses prescribed by the Board.

(3) The Director may not under section 25(1) of the Act, reduce the term of apprenticeship to be served by an apprentice to less than one period of apprenticeship.

5 When a contract of apprenticeship is registered with the Director, he shall issue a record book to the apprentice pursuant to section 14 of the General Regulations.

6(1) The Director shall make an entry in the apprentice's record book authorizing advancement to the next period when the apprentice

(a) has completed a period of apprenticeship,

(b) has received, in the opinion of the Director, a satisfactory report from

  (i) his employer, and

  (ii) a school at which he attended technical training courses prescribed by the Board,

and

(c) has

  (i) completed the tests and examinations prescribed by the Board, and

  (ii) attained pass marks prescribed by the Board in those tests and examinations.

(2) An apprentice shall not advance to the next period until the Director has authorized him to do so by making an entry in the apprentice's record book.

7 The record book of an apprentice shall be kept in the possession of his employer and, upon termination of the employment of the apprentice, the employer shall return the book to the apprentice.

8(1) An employer shall pay wages to the apprentice that are not less than the following percentages of the prevailing wage paid to a journeyman:

(a) 60% in the first period;

(b) 85% in the 2nd period.

(2) Notwithstanding subsection (1), the wages paid to an apprentice shall not be less than the minimum wage fixed pursuant to The Alberta Labour Act, 1973.

(3) An employer is not required to pay wages to an apprentice during the time that the apprentice spends attending technical training courses prescribed by the Board.

9 The hours of work and working conditions of an apprentice shall be the same as those of a journeyman.

PART 2
CERTIFICATION

10 In addition to section 32 of the General Regulations, the Director may issue a Certificate of Qualification for the trade without examination to a person who holds

(a) a Certificate of Completion of Apprenticeship in this trade issued by another province or territory within Canada, or

(b) a Certificate of Qualification or a Certificate of Proficiency in this trade issued by another province or territory within Canada bearing an Interprovincial Standards Red Seal.

11(1) An application to take an examination for a Certificate of Qualification shall be made to the Director.

(2) Documentary evidence acceptable to the Director shall be presented by an applicant for an examination showing that the applicant

(a) holds a certificate equivalent to an Alberta Certificate of Qualification issued by a provincial authority outside of Alberta, or

(b) has at least 3600 hours of acceptable work experience in the trade.

(3) The applicant shall provide English translations acceptable to the Director, of credentials in a foreign language submitted pursuant to subsection (2).

12 Certificates of Qualification issued under these regulations are effective unless cancelled or suspended by the Director in accordance with sections 42 and 43 of the General Regulations.

13 Alberta Regulation 68/75 is repealed.

GOVERNMENT OF THE PROVINCE OF ALBERTA

ALBERTA REGULATION 421/83

(Filed on December 2, 1983)

MANPOWER DEVELOPMENT ACT

MINISTERIAL ORDER

I, Ernie Isley, Minister of Manpower, pursuant to sections 30(2) and 37(2) of the Manpower Development Act, hereby make the Regulation in the attached Appendix being the Water Well Driller Trade Amendment Regulation.

DATED at Edmonton, Alberta this 1st day of December, 1983

ERNIE ISLEY
MINISTER OF MANPOWER

APPENDIX

MANPOWER DEVELOPMENT ACT

Water Well Driller Trade Amendment Regulation

1 *The Water Well Driller Trade Regulation (Alta. Reg. 362/79) is amended by this regulation.*

2 *Section 8(2) is amended by striking out* "The Alberta Labour Act, 1973" *and substituting* "the Employment Standards Act".

3 *Section 11(2)(b) is amended by striking out* "3600" *and substituting* "5400".

N.L.C. - B.N.C.
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